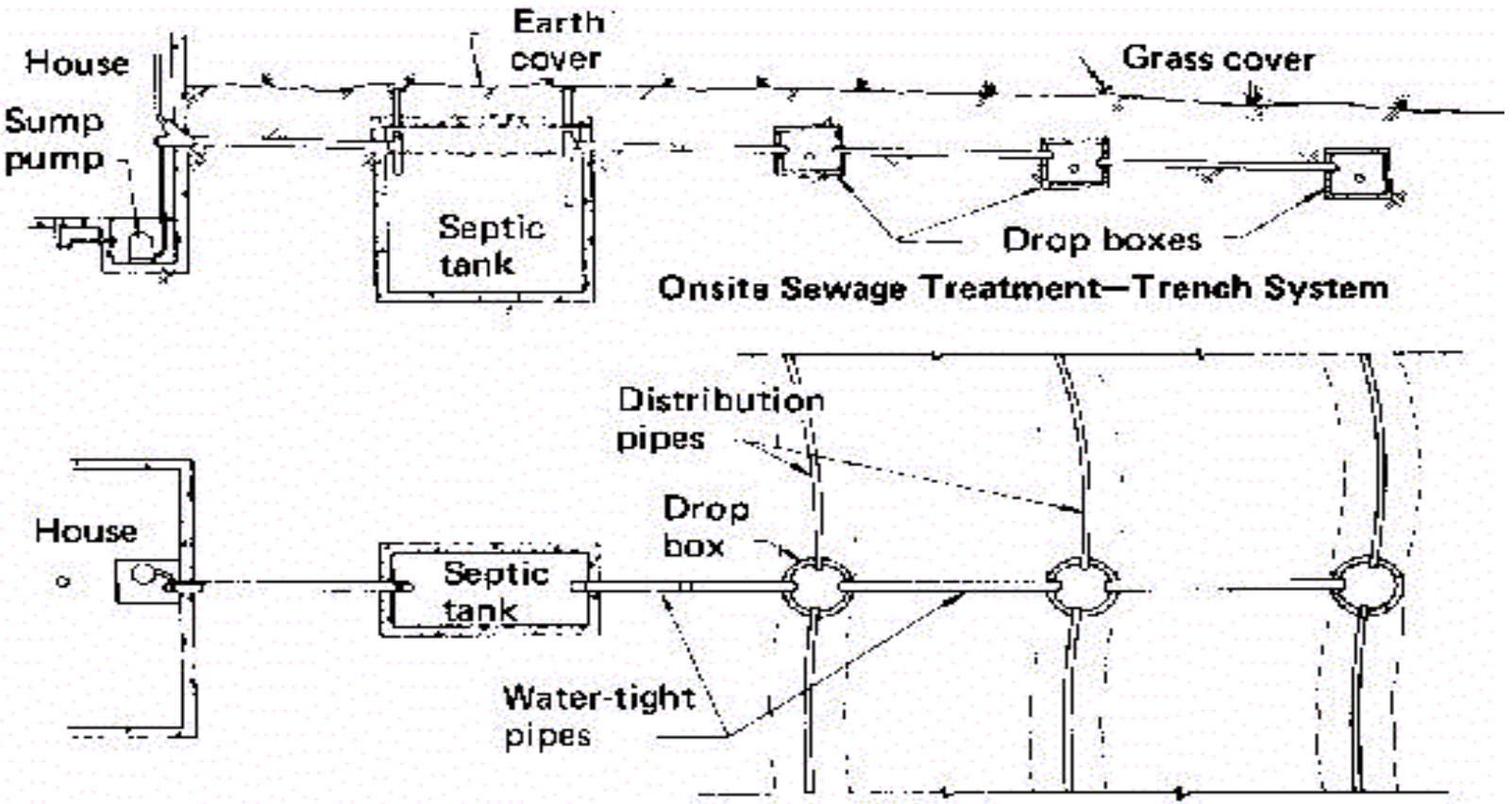
2004 Facilities & Asset Management Conference

New NPS Asset Management Business Practices

May 5, 2004
Orlando, FL

How many assets are in this picture?



Why are asset management business practices even worth talking about?

- Isn't the goal of the program to spend down maintenance backlog?
- Isn't this really just about getting more project funds?
- Isn't this all just going to go away soon?

- No! NPS is putting a long-term asset management program in place to—
  - Better articulate to Congress and other decision makers the budgetary needs for maintenance and recapitalization of existing assets.
  - Consider the full life cycle costs of its investments so that managers understand the liabilities and the benefits associated with taking on new assets.

Managing a typical asset over a 50-year lifetime requires substantial resources

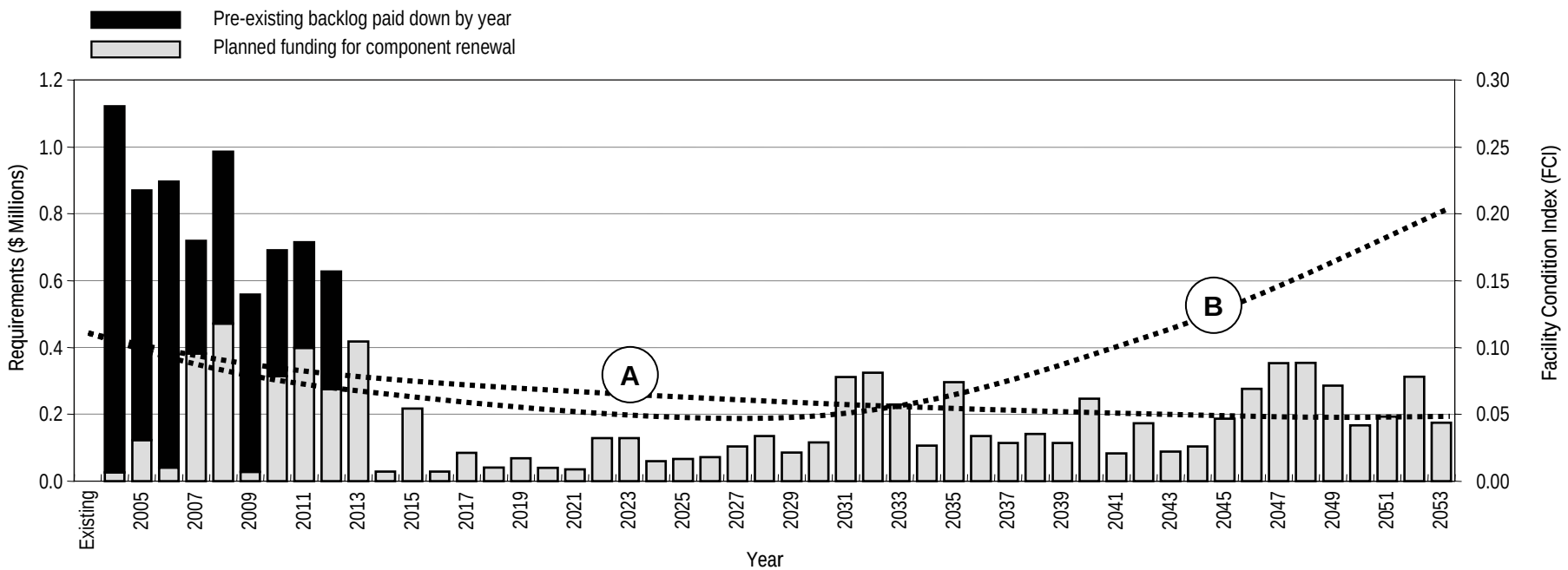
- Construction is only a small portion of the total cost of an asset over its lifetime.
- On-going maintenance needed to keep the asset operational over time requires additional, more substantial costs.

Asset Life Cycle

2 - 4 years	50 years
20 - 30% of costs	70 - 80% of costs

Sample NPS outputs: Life cycle needs at Rocky Mountain NP…Incorporating component renewal data creates powerful planning information…

In this analysis, TREND LINE A illustrates a required funding level to achieve and maintain an acceptable level of condition over time…However, TREND LINE B shows the impact of applying funds to reduce the initial maintenance backlog but neglecting long-term recapitalization needs—the FCI under TREND LINE B escalates back out of acceptable range in the long-term negating the initial short-term improvement…



Creating strategies to arrest and correct maintenance backlog…

- Maintenance backlog reduction is complex; it's not just about getting funds for projects…Must have—
  - Targeted investment strategies
  - Desired level of condition (since it's unlikely that all backlog can be eliminated)
  - Accurate asset inventories with accurate condition assessment information
  - Program that incorporates life cycle concepts of preventive maintenance and recapitalization
  - Program with mature repeatable processes
  - Metrics for measuring performance, prioritizing investment decisions, and managing an asset portfolio
  - Commitment to the total cost of asset ownership through integrated partnerships in the planning, design, construction, operations, maintenance, recapitalization, and disposal of assets

But How?

NPS is incorporating stewardship and life-cycle concepts into its business practices…

- Stewardship Mentality
  - What do we own?
  - What is its value?
  - What is its condition?
  - What is required to sustain it over time?

National Park Service Asset Inventory (as of September 30, 2003)	
Paved Roads	**5,456 miles**
Unpaved Roads	**4,758 miles**
Trails	**16,741 miles**
Campgrounds	**1,168**
Buildings	**17,454**
Employee Housing Units	**4,783**
Water Treatment Systems	**1,282**
Waste Water Treatment Systems	**1,433**

Asset management business practices…DO #80

- Stewardship Mentality
  - What do we own?
  - What is its value?
  - What is its condition?
  - What is required to sustain it over time?

DIRECTOR'S ORDER #80: Asset Management

Approved: _____
Director, National Park Service

Effective Date:

Issued by the Associate Director, Park Planning, Facilities and Lands, this Director's Order and the associated Reference Manual supersede the 1986 National Park Service Maintenance Management System and all other previously published directives and policy related memoranda regarding National Park Service Asset Management.

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What do we own?

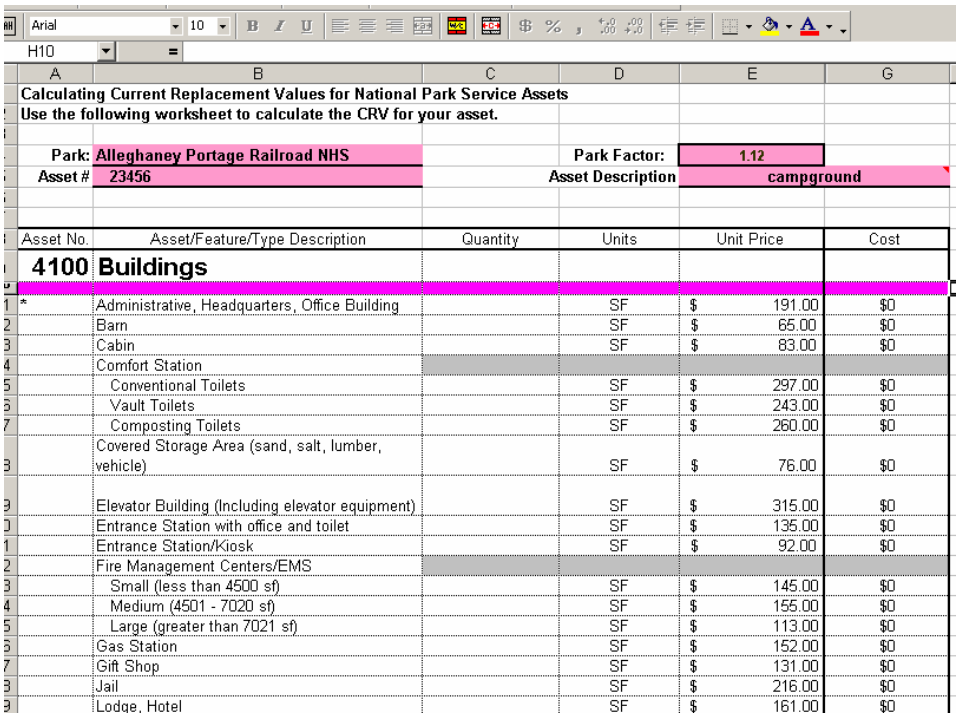
- Creating an accurate asset inventory is no trivial exercise—but it has to be a pillar of effective stewardship

- Business practices
  - Asset categorization
  - Asset hierarchies
  - Quantities (SF, LF, EA…)
  - Special assets present challenges—trails, maintained landscapes, ruins, fortifications, etc.
  - Equipment information (MEP, roof structure, etc.)
  - Technology customization

What is its value?

- Proper determination of asset replacement value is an essential element of sound stewardship practices

- Business practices
  - Current replacement value (CRV)
  - CRV calculator
  - Incorporation of CRV into primary metric for measuring condition (denominator of FCI)
  - Non-standard assets presents challenges (trails, maintained landscapes, ruins, etc.)
  - Factors for location, special conditions, etc.



Calculating Current Replacement Values for National Park Service Assets
Use the following worksheet to calculate the CRV for your asset.

Park:	Alleghaney Portage Railroad NHS		Park Factor:	1.12	
Asset #	23456		Asset Description	campground	

Asset No.	Asset/Feature/Type Description	Quantity	Units	Unit Price	Cost
4100	**Buildings**				
*	Administrative, Headquarters, Office Building		SF	$ 191.00	$0
	Barn		SF	$ 65.00	$0
	Cabin		SF	$ 83.00	$0
	Comfort Station				
	Conventional Toilets		SF	$ 297.00	$0
	Vault Toilets		SF	$ 243.00	$0
	Composting Toilets		SF	$ 260.00	$0
	Covered Storage Area (sand, salt, lumber, vehicle)		SF	$ 76.00	$0
	Elevator Building (Including elevator equipment)		SF	$ 315.00	$0
	Entrance Station with office and toilet		SF	$ 135.00	$0
	Entrance Station/Kiosk		SF	$ 92.00	$0
	Fire Management Centers/EMS				
	Small (less than 4500 sf)		SF	$ 145.00	$0
	Medium (4501 - 7020 sf)		SF	$ 155.00	$0
	Large (greater than 7021 sf)		SF	$ 113.00	$0
	Gas Station		SF	$ 152.00	$0
	Gift Shop		SF	$ 131.00	$0
	Jail		SF	$ 216.00	$0
	Lodge, Hotel		SF	$ 161.00	$0

What is its condition?

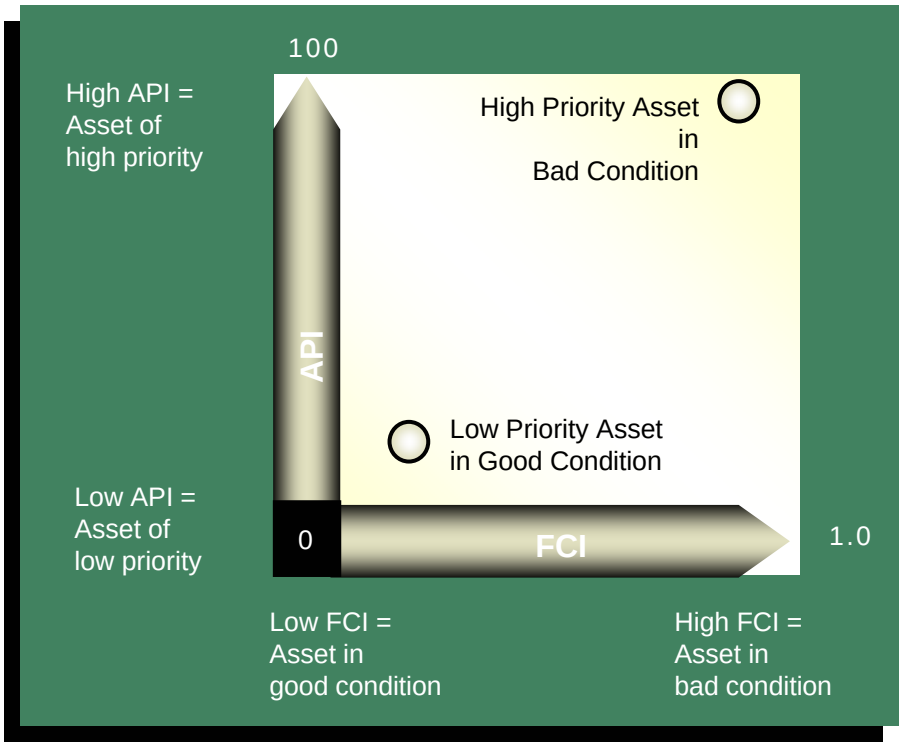
- Understanding baseline condition is an essential element of an asset management program

- Business practices
  - Type of assessment (comprehensive, annual, life cycle)
  - Frequency
  - Level of detail
  - Consistency (Training)
  - Technology tools (MAXIMO)
  - Work orders
  - Measuring condition over time
  - Cost estimating (Class “C”)

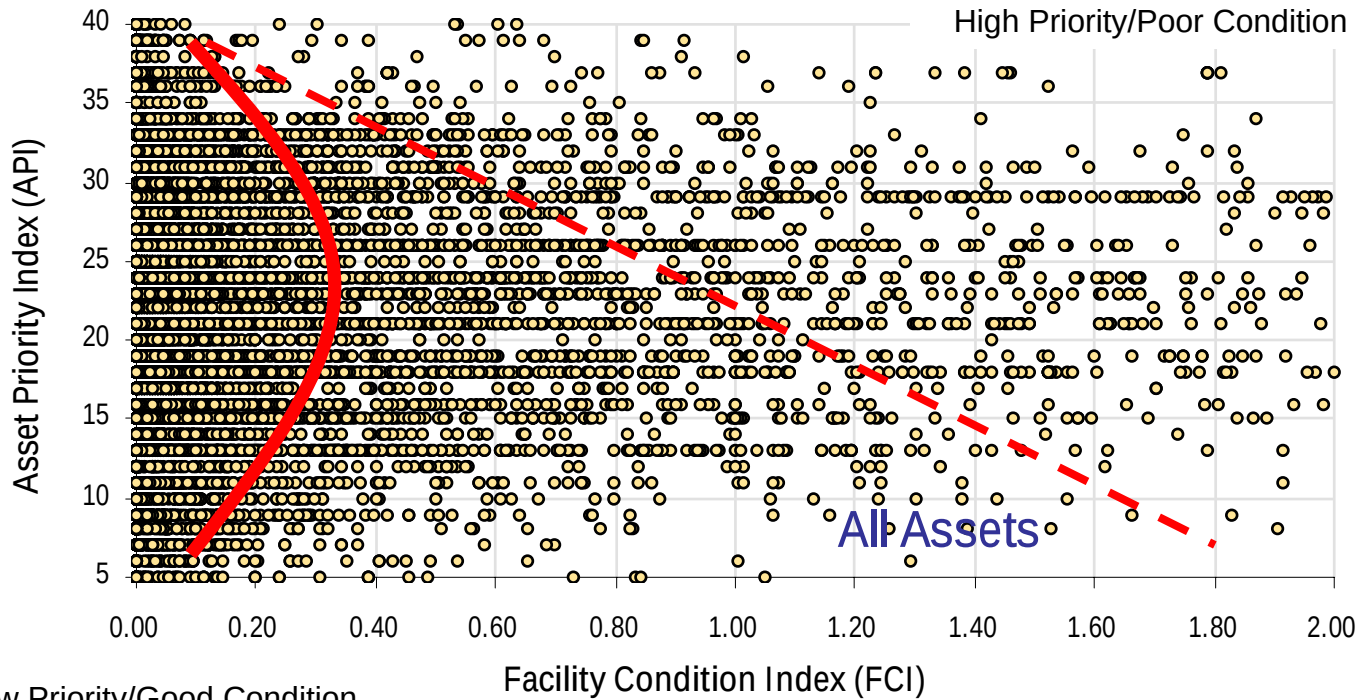
What is required to sustain it over time?

- An asset management program has to be focused on the life cycle of an inventory or portfolio, not just the current state as things are today

- Business practices
  - Performance metrics (FCI, API)
  - Investment targets at the asset level
  - Component renewal (recapitalization)
  - Tracking of assets (after the project)
  - Disposal strategies
  - Preventive maintenance and other work types
  - Equipment level data (when does something need to be replaced?)



This API/FCI matrix of 9,966 assets validates the assumption that parks have historically allocated resources equally across all assets (regardless of asset priority)

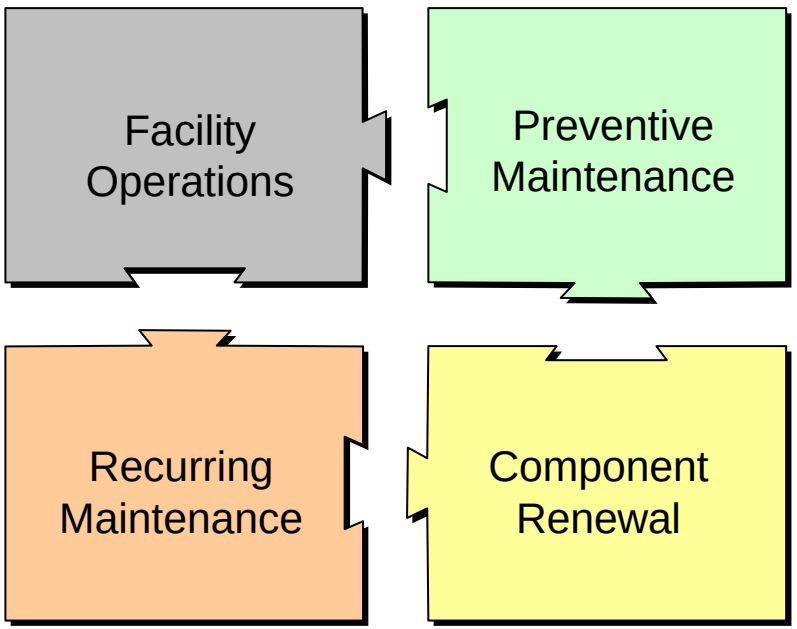


The solid curve (and the dense distribution of assets with FCIs below 0.3 across all APIs) suggests that the importance of an asset to a park's mission has little bearing on its current condition

As the asset management program matures and more maintenance decisions are tied to API, the distribution should tend more toward the dotted line – with higher priority assets having better conditions

NOTE: The graph includes 9,966 "fully-costed" assets from all asset types. We have excluded any assets with total deficiencies less than $150 and those with FCI > 2.

The implementation of work types is enabling NPS to understand operations, maintenance, and recapitalization requirements over extended periods…



Facility Operations – Work activities performed on a recurring basis throughout the year which intend to meet routine, daily park operational needs. Typical work performed under operations includes janitorial and custodial services, snow removal, operation or purchase of utilities (water, sewer, and electricity), grounds keeping, etc. (GAO Parks and Recreation report March 1988).

Preventive Maintenance – Regularly scheduled periodic maintenance activities (within a year) on selected equipment, typically includes inspection, lubrication, and minor adjustment.

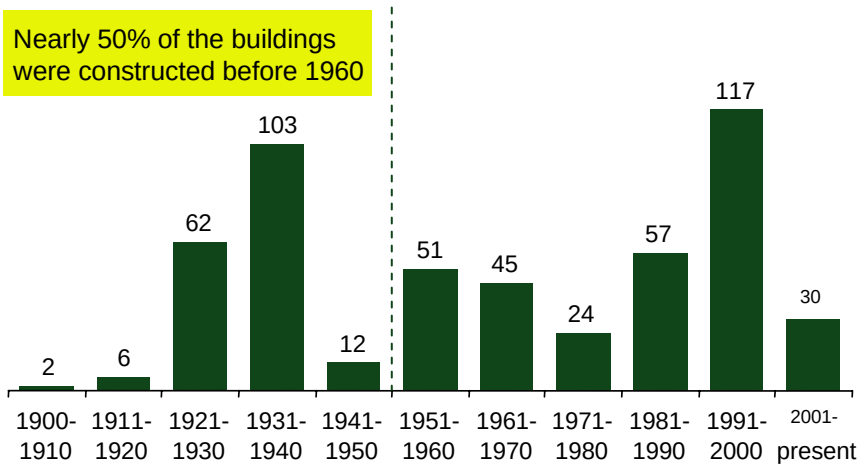
Recurring Maintenance (cyclic in nature) – Work activities that recur based on normal wear patterns on a periodic cycle of greater than 1 year and less than 10 years. Typical work includes painting, caulking, sealing, carpet replacements, etc.

Component Renewal (also known as recapitalization) – The planned replacement of a component or system that will reach the end of its useful life based on condition and life-cycle analysis within the facility's lifetime. Examples of Component Renewal include roof systems, utility components, pavement, and other major dynamic equipment.

Sample outputs from a park: inventory, valued at nearly $1 billion, is large, diverse, unique, and aging

- The value is distributed among the major asset types
- Nearly 50 percent of the buildings are more than 40 years old
  - Because of the aging inventory, the park will face “waves” of expiring systems
  - Park needs tools to plan for substantial outyear costs

Building Construction History



Asset Type	Count	Quantity	Current Replacement Value ($K)
Paved Roads	74	101 miles	127,240
Unpaved Roads	45	175 miles	148,716
Paved Parking	73	2,297,981 square feet	11,529
Unpaved Parking Areas	3	180,043 square feet	993
Trail	81	3,343,232 linear feet	126,678
Trail Bridges	11	11	1,954
Maintained Landscape	4	3 acres	15
Livestock Area	1	3 acres	100
Campgrounds	8	8	7,857
Picnic Area	4	4	225
Building	304	461,317 square feet	105,568
Housing	319	445,713 square feet	104,043
Out Building	54	20,359 square feet	4,074
Water System	17	17	256,504
Wastewater System	8	8	73,878
Electrical System	1	25 kilo volts	8,676
Phone Systems	1	1	351
Gasoline Fuel System	1	1	75
Diesel Fuel System	3	3	289
Amphitheatre	2	2	1,926
	1,014		**980,693**

The condition of these assets varies by asset type. Trails, water, and wastewater systems are in the worst shape…

Asset Type	Current Replacement Value ($K)	Deferred Maintenance ($K)	Facility Condition Index
Paved Roads	127,240	12,724	0.10
Unpaved Roads	148,716	8,190	0.06
Paved Parking	11,529	230	0.02
Unpaved Parking Areas	993	247	0.25
Trail	126,678	32,935	0.26
Trail Bridges	1,954	341	0.17
Maintained Landscape	15	0	–
Livestock Area	100	0	–
Campgrounds	7,857	615	0.08
Picnic Area	225	70	0.31
Building	105,568	2,167	0.02
Housing	104,043	4,264	0.04
Out Building	4,074	69	0.02
Water System	256,504	28,870	0.11
Wastewater System	73,878	15,667	0.21
Electrical System	8,676	0	–
Phone Systems	351	66	0.19
Gasoline Fuel System	75	2	0.03
Diesel Fuel System	289	8	0.03
Amphitheatre	1,926	0	–
	980,693	**106,467**	**0.11**

- The condition of the assets at the park varies by asset type
  - Buildings, housing, and fuel systems are considered to be in overall good condition.
  - Trails and roads are in relatively worse condition
  - The combined deferred maintenance on the water and wastewater systems point to an impending problem within the park. The facility condition index score reflects the poor condition of the utilities

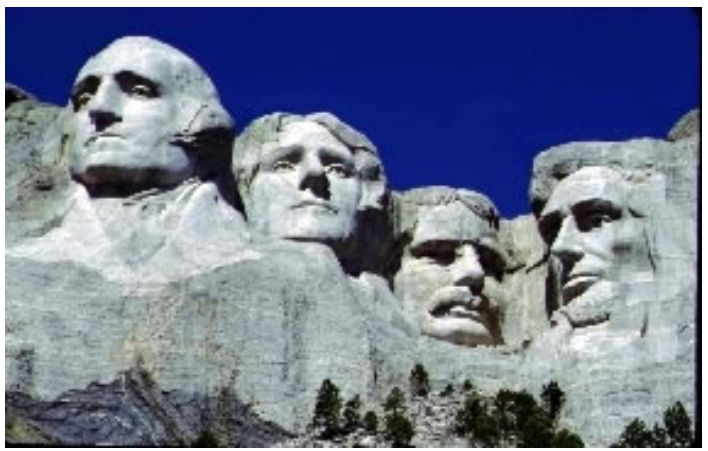
The Facility Condition Index (FCI) is a metric calculated by dividing the deferred maintenance by the current replacement value.

$$\text{FCI} = \frac{\text{Deferred Maintenance}}{\text{Current Replacement Value}}$$

The FCI is used by facility managers to better understand the relative condition of assets within a portfolio. A score closer to 0.0 reflects better condition.

National Park Service asset management preserves the parks for future generations

- By effectively managing assets, NPS will maintain its infrastructure over time.
  - Maintenance and repair of park facilities can be funded to ensure resource protection and visitor enjoyment for years to come.
  - The significant public investment in park infrastructure will be aligned with mission and responsive to future needs.



The presenters…

- Mr. John R. Selman has 14 years of experience in capital asset planning, infrastructure renewal forecasting, and environmental management. He is responsible for implementing a capital asset management service offering at Booz Allen Hamilton and provides expertise in helping organizations improve asset management maturity through enhanced inventory management and condition assessment, asset valuation, facility planning and budgeting, and life cycle management. He has a B.A. in Economics from the University of Connecticut, an M.P.A. from the Maxwell School of Citizenship and Public Affairs at Syracuse University, and an M.S. in Environmental Sciences from the Johns Hopkins University. Mr. Selman is Booz Allen Hamilton's Program Manager supporting the NPS Park Facility Management Division's Asset Management Program.

- Mr. Timothy M. Harvey is a 28 year career employee with the National Park Service. His assignments have included working in the maintenance divisions of Yosemite National Park, Grand Canyon National Park, Glen Canyon National Recreation Area, and Mount Rushmore National Memorial. Mr. Harvey currently works in the Park Facility Management Division in the Washington Office serving as the Team Leader, Facility Management and Stewardship Systems, with responsibilities for development, deployment, and implementation of asset management practices and systems within the National Park Service.

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